

WHAT IS CLAIMED IS:

- 1 1. A stent delivery system, comprising:
2 a catheter comprising a catheter body having a distal end, a proximal end, a
3 longitudinal axis and a lumen;
4 an expansion device disposed near the catheter body distal end;
5 a stent having a side hole, said stent being disposed over the expansion device;
6 and
7 an ultrasound transducer disposed near the catheter body distal end and
8 positioned for transmitting and receiving ultrasound signals through said side hole.
- 1 2. The stent delivery system as in claim 1 wherein said expansion device
2 comprises a balloon.
- 1 3. The stent delivery system as in claim 1 wherein said ultrasound
2 transducer is disposed inside said expansion device.
- 1 4. The stent delivery system as in claim 1 wherein said ultrasound
2 transducer is disposed between said expansion device and said stent.
- 1 5. The stent delivery system as in claim 1 wherein said ultrasound
2 transducer is adapted to be axially translated along said longitudinal axis.
- 1 6. The stent delivery system as in claim 1 wherein said ultrasound
2 transducer is adapted to be rotated relative to said longitudinal axis.
- 1 7. The stent delivery system as in claim 1 further comprising a transducer
2 housing to which said transducer is coupled, said housing having a distal end, a proximal end
3 that is coupled to a drive cable, and a passageway passing through said housing between said
4 proximal and distal ends.
- 1 8. The stent delivery system as in claim 7 wherein said drive cable is
2 adapted to rotate said housing relative to said catheter distal end.
- 1 9. The stent delivery system as in claim 1 further comprising a guidewire
2 at least partially disposed in said lumen.

1 10. The stent delivery system as in claim 7 further comprising a guidewire
2 at least partially disposed in said lumen and passing through said passageway.

1 11. The stent delivery system as in claim 1 further comprising a controller
2 coupled to said transducer.

1 12. A stent delivery system, said system comprising:
2 a catheter comprising a catheter body having a distal end, a proximal end and
3 a lumen;
4 a balloon disposed near said catheter body distal end;
5 a stent having a side hole, said stent disposed over said balloon;
6 an ultrasound transducer housing having a distal end, a proximal end, and a
7 passage through said housing between said distal and proximal ends, said housing having a
8 transducer coupled thereto; and
9 a positioning guidewire at least partially disposed in said catheter lumen, said
10 guidewire passing through said transducer housing passageway.

1 13. A method of positioning a stent having a side opening, said method
2 comprising:
3 providing a stent delivery system, comprising;
4 a catheter comprising a catheter body having a distal end, a proximal
5 end, a longitudinal axis and a lumen;
6 an expansion device disposed near the catheter body distal end;
7 a stent having a side hole, said stent being disposed over the expansion
8 device; and
9 an ultrasound transducer disposed near the catheter body distal end for
10 transmitting and receiving ultrasound signals through said side hole;
11 positioning said stent delivery system in a body lumen;
12 imaging said body lumen with said transducer to locate an ostium of a branch
13 vessel; and
14 aligning said stent side hole with said ostium.

1 14. The method of claim 13 wherein said transducer is disposed in said
2 expansion device.

1 15. The method of claim 13 wherein said ultrasound transducer is adapted
2 to rotate relative to said longitudinal axis, and said imaging further comprises rotating said
3 transducer to image a cross section of said body lumen.

1 16. The method of claim 13 wherein said aligning comprises axially
2 translating said stent.

1 17. The method of claim 13 wherein said aligning comprises rotating said
2 stent about said longitudinal axis.

1 18. The method of claim 13 further comprising:
2 introducing a body lumen guidewire into said body lumen; and
3 advancing said catheter over the guidewire and through said body lumen to be
4 near said branch vessel.

1 19. The method of claim 18 wherein said transducer is coupled to a
2 housing having a passageway through which said guidewire passes, said advancing also
3 advancing said transducer housing to be near said branch vessel.

1 20. The method of claim 13 wherein said stent delivery system further
2 comprises a controller coupled to said transducer for controlling said imaging.

1 21. A kit comprising:
2 a stent delivery system as in claim 1; and
3 instructions for use setting forth a method for positioning said stent in a
4 bifurcated body lumen so that said side hole is substantially aligned with an ostium of a
5 branch vessel.